

CLAIMS

1. In combination with an actuator within which maximized magnetostriction deformation is induced by magnetic fields crystallographically applied in a predetermined direction; the improvement residing in: means for transferring force produced by said applied magnetic fields in a direction perpendicular to said predetermined direction; and means for converting said force into a substantially enlarged output motion.

2. The combination as defined in claim 1, including a plate member to which said output motion is imparted; and a plurality of magnetostrictive material slabs within which said magnetostrictive deformation is induced.

3. The improvement as defined in claim 2, wherein said force transferring means comprises: a plurality of interconnectors on which said magnetostrictive material slabs are positioned; and retainer means projecting from each of the interconnectors in engagement with the slabs for preventing said deformation thereof in said perpendicular direction to produce the transferring force.

4. The improvement as defined in claim 3, including means for exerting a prestress bias on the force transferring means.

5. The improvement as defined in claim 1, including means for exerting a prestress bias on the force transferring means.

1 6. A magnetostrictive actuator, comprising: a ground member; an output member; magnetic
2 circuit means for inducing output motion of the output member in one direction perpendicular to
3 maximized magnetostriction produced by applied magnetic fields and prestress means for holding
4 the magnetic circuit means assembled under bias between the ground and output members.

1 7. The actuator as defined in claim 6, wherein the magnetic circuit means comprises: a
2 plurality of layers held assembled in contact with the ground and output members by the prestress
3 means; each of said layers having spaced sides and interconnectors extending between said sides
4 in said one direction; a plurality of magnetostrictive material slabs positioned on the
5 interconnectors in each of the layers; wiring coil means for generation of the magnetic fields
6 applied to the slabs; and retainer means on the interconnectors for transfer of forces between the
7 ground and output members in said one direction.